

Claims

- [1] 1. A method for preparing (S)-indoline-2-carboxylic acid methyl ester by use of a hydrolytic enzyme, comprising the following steps:
reacting racemic indoline-2-carboxylic acid with methanol and thionyl chloride, to give racemic indoline-2-carboxylic acid methyl ester;
selectively hydrolyzing (R)-form of the racemic indoline-2-carboxylic acid methyl ester in a buffer solution by use of the hydrolytic enzyme to produce (S)-indoline-2-carboxylic acid methyl ester; and
separating and recovering the (S)-indoline-2-carboxylic acid methyl ester, wherein said hydrolytic enzyme is selected from the group consisting of Savinase, Alcalase, Novozym 243, Everlase, Esperase, Protease 7, and Acylase.
- [2] 2. The method as defined in claim 1, wherein the buffer solution is an aqueous sodium carbonate solution, and is maintained in pH 7 to 9.
- [3] 3. The method as defined in claim 1, wherein the selective hydrolyzing step is performed at 25 to 50 °C for 3 to 85 hours.
- [4] 4. The method as defined in claim 1, wherein a ratio by weight of the hydrolytic enzyme to the racemic indoline-2-carboxylic acid methyl ester is in a range of 1:10 to 1:40.
- [5] 5. The method as defined in claim 1, wherein the concentration of the racemic indoline-2-carboxylic acid methyl ester ranges from 10 to 50% (w/w) in the selective hydrolyzing step.
- [6] 6 The method as defined in claim 1, wherein the hydrolytic enzyme takes the form of powder or liquid, or forms immobilized on a support.
- [7] 7. The method as defined in claim 1, wherein the recovered (S)-indoline-2-carboxylic acid methyl ester has an optical purity of at least 99 %e.e.
- [8] 8. A method for preparing (S)-indoline-2-carboxylic acid by use of a hydrolytic enzyme, comprising the following steps:
reacting racemic indoline-2-carboxylic acid with methanol and thionyl chloride, to give racemic indoline-2-carboxylic acid methyl ester;
selectively hydrolyzing (R)-form of the racemic indoline-2-carboxylic acid methyl ester in a buffer solution by use of the hydrolytic enzyme to obtain an un-hydrolyzed (S)-indoline-2-carboxylic acid methyl ester;
separating and recovering the (S)-indoline-2-carboxylic acid methyl ester; and

hydrolyzing the recovered (S)-indoline-2-carboxylic acid methyl ester in an alkali aqueous solution to produce (S)-indoline-2-carboxylic acid, followed by recovering the resulting (S)-indoline-2-carboxylic acid,

wherein, said hydrolytic enzyme is selected from the group consisting of Savinase, Alcalase, Novozym 243, Everlase, Esperase, Protease 7, and Acylase.

- [9] 9. The method as defined in claim 8, wherein the buffer solution is an aqueous sodium carbonate solution, and is maintained in pH 7 to 9.
- [10] 10. The method as defined in claim 8, wherein the selective hydrolyzing step is performed at 25 to 50 °C for 3 to 85 hours.
- [11] 11. The method as defined in claim 8, wherein a ratio by weight of the hydrolytic enzyme to the racemic indoline-2-carboxylic acid methyl ester is in a range of 1:10 to 1:40.
- [12] 12. The method as defined in claim 8, wherein the concentration of the racemic indoline-2-carboxylic acid methyl ester ranges from 10 to 50% (w/w) in the selective hydrolyzing step.
- [13] 13. The method as defined in claim 8, wherein the hydrolytic enzyme takes the form of powder or liquid, or forms immobilized on a support.
- [14] 14. The method as defined in claim 8, wherein the recovered (S)-indoline-2-carboxylic acid has an optical purity of at least 99 %e.e.